GOVERNMENT POLYTECHNIC CHAPRA

MORHOWRAH, BIHAR

DEPARTMENT OF ELECTRONICS ENGINEERING

DIPLOMA – 3RD SEMESTER – 2022

SUBJECT CODE: **2021302**

SUBJECT NAME: **ELECTRONIC DEVICES AND CIRCUITS**

1. (a) Define semiconductor and diodes.

(b) What is called NPN & PNP TRANSISTORS?

(c) How does the current flow in PN junction diode?

(d) Write short notes on small signal amplifiers and large signal amplifiers.

2. Explain the biasing conditions for the P-N junction Diode with suitable diagrams.

3. What is the meaning of Zener breakdown voltage and what is the main purpose of Zener diode?

4. How does the Zener diode work in reverse bias and write the applications of Zener diode.

5. Distinguish between Avalanche and Zener breakdown in Zener diode.

6. Briefly explain the working principle of different types of rectifiers with suitable diagrams and write its advantage, disadvantages and applications

7. Differentiate between LC filter and Pi filter with suitable circuit diagram.

8. Explain about different transistor configuration with suitable diagram.

9. Differentiate between Negative feedback and positive feedback.

10. What is holes and electrons in semiconductor and write down the applications of semiconductor.

11. Explain the mobility of Electrons and Holes.

12. Explain the band theory of Semiconductor.

13. What is called conduction band and valence band in semiconductor?

14. What is Fermi level in semiconductor?

15. Write down the properties of semiconductor.

16. Why does the resistivity of semiconductors go down temperature?

17. State the Important properties of Semiconductor

18. Briefly explain the different types of semiconductor?

19. What is the difference between Intrinsic and Extrinsic semiconductors?

20. Differentiate between N-type and P-type semiconductor.

21. Explain the formation of P-N junction diode.

22. State the V-I characteristics of PN junction diode.

23. What is the advantages and disadvantages of PN junction diode.

24. What is minimum Zener current?

25. What is the need to heavily dope the Zener diode.

26. State the specifications of Zener diode.

27. How Zener diode can be used in overvoltage protection

28. What is the working principle of Zener diode.

29. Explain the V-I characteristics of Zener diode.

30. What is the difference between Zenner diode and Normal diode.

31. Why Zener diode is used as a regulator.

32. What is the working principle of half wave rectifier and write its advantages and disadvantages and its applications.

33. What are the characteristics of half wave rectifier?

34. What is the working principle of full wave rectifier and write its advantages and disadvantages and its applications.

35. What are the characteristics of half wave rectifier?

36. What is an Electronic Filter?

37. Differentiate between active filter and Passive filter.

38. State the following active low pass filter, active high pass filter, active band pass filter, active band reject filter.

39. What are the characteristics of filter?

40. Write the working principle of Capacitor filter.

41. What is the working principle of NPN transistor with the help of circuit diagram?

42. What is the working principle of PNP transistor with the help of circuit diagram?

43. What are the characteristics of NPN and PNP transistor?

44. Explain the high frequency model of BJT.

45. Explain the classification of amplifiers.

46. What is the Working principle of FET.

47. Write down the classification of FET.

48. Write down the classification of MOSFET.

49. Briefly explain about the N-channel and P-channel MOSFET?

50. What is the characteristics of JFET and explain its different types.

51. State the characteristics of MOSFET.

52. What is enhancement mode and depletion mode in FET?

53. How MOSFET can be used as a switch.

54. What is the working principle and draw the equivalent circuit of Uni-Junction transistor?

55. What is called common source amplifiers?

56. What are the characteristics of Uni-junction transistor?

57. What is the working principle of SCR .

58. Explain the construction of SCR with suitable diagram.

59. State the operation of SCR.

60. Write down the characteristics of SCR.

61. Explain the construction, operation, working and characteristics of DIAC.

62. Explain the construction, operation, working and characteristics of TRIAC.

63. How MOSFET and SCR can be used as a switch.

64. Explain how DIAC act as a bidirectional switch.

65. Compare between SCR, DIAC and TRIAC.

66. Explain the working principle of Feedback amplifiers with suitable diagram.

67. What is the properties of Negative feedback.

68. What is the impact of feedback on different parameters.

69. Explain the various types of Feedback amplifier topologies with suitable diagram and applications.

70. State the working principle of oscillator and write its advantage and disadvantages and its applications.

71. Explain the construction of crystal oscillator.

72. Distinguish between Non-linear and pulse oscillator.